

2016 Winnebago System Walleye Report

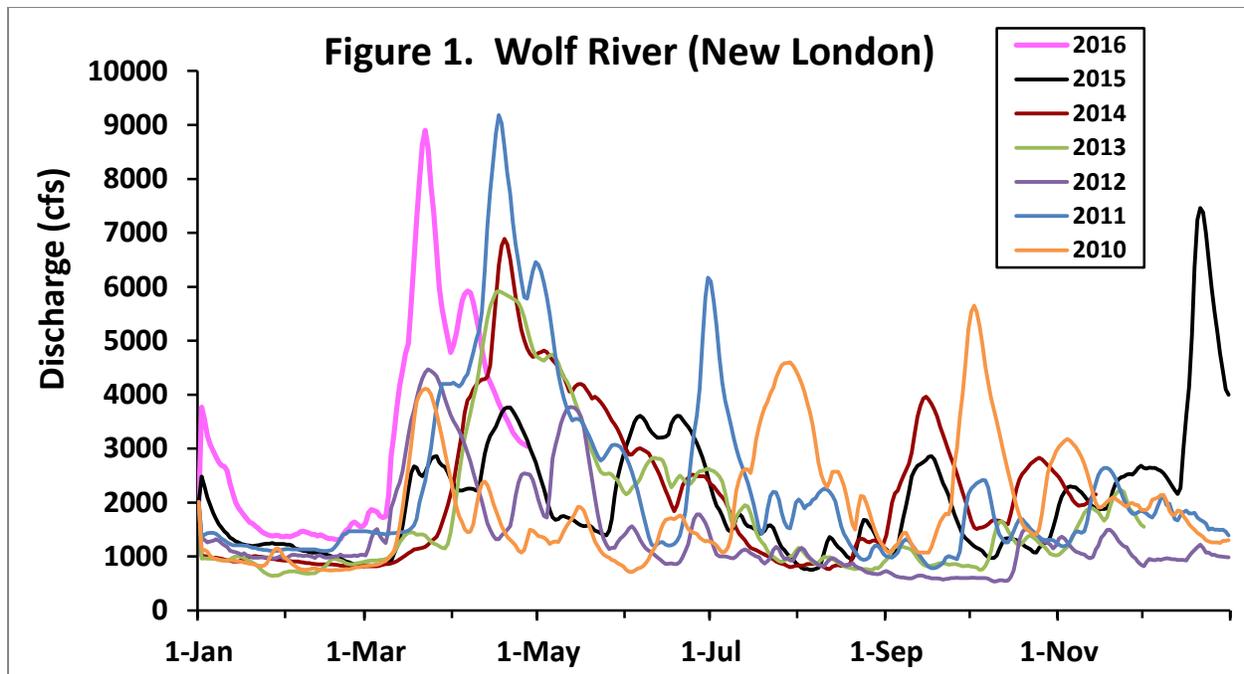
Adam Nickel, Winnebago System Gamefish Biologist, April 2017

The Winnebago System continues to produce one of the top walleye fisheries in the Midwest. DNR staff conducts several annual surveys to assess the Winnebago walleye population, including the annual spring walleye spawning stock assessment. The primary objectives of the survey include: 1) marking fish with anchor (floy) tags to estimate angler exploitation and abundance, 2) evaluating age and size distribution of the adult spawning stock, 3) monitoring adult growth and mortality rates, and 4) assessing spawning marsh conditions. Additional surveys conducted to help assess the walleye population include spring immature female tagging, the annual bottom trawling assessment, and tournament monitoring. As the 2017 walleye run progresses, now is a great time to look back on the 2016 season.

The combinations of snow melt and rain events produced high spring water levels on the Wolf River in 2016. Water levels at the New London gauge station indicated a steady increase in discharge during mid-March, before peaking at 8,900 cubic feet per second (cfs) on March 21 which ranked as the second highest spring discharge since 2010 (Figure 1). Water levels then decreased into late March, before another small flood pulse occurred in early April. Unlike 2015 when low water levels left many of the traditional spawning marshes dry, good flow conditions in 2016 provided ideal conditions in many spawning marshes throughout the Wolf River.



DNR fisheries staff (Kendall Kamke, Adam Nickel, and Jason Kohls from left-right) showcasing a host of walleyes sampled and tagged during 2016 spring electrofishing surveys conducted on the Wolf River.



The high water conditions provided good access to marshes throughout the Wolf River and DNR staff were able to survey 18 different spawning marshes. In fact, several new highs were set for the number of fish sampled in some marshes including, Weilands Marsh (393 fish) and Jenny’s Bayou (215 fish). In addition, several marshes were sampled in 2016 that weren’t sampled for many years, including Colic Slough (292 fish) that was last sampled in 2004. In addition to sampling a wide variety of marshes, DNR staff were able to exceed the target of tagging 5,000 walleyes. There were 3,808 male and 1,501 female walleye tagged in the Wolf River during March 16-April 1. Overall, the 2016 walleye spawn began in late March with peak spawning occurring during early April. In comparison, peak walleye spawning in 2013-2015 ranged from early-mid April, whereas surveys in 2012 indicated peak spawning during mid-March.

Male walleye ranged from 11.5-25.5 inches with an average length of 15.7 inches (Figure 2). Age analyses revealed three primary age classes that comprised 73.5% of males sampled that included the strong 2013 (36.9%), 2011 (21.4%), and 2008 (15.2%) year classes (Figure 3). Aside from the 2013, 2011, and 2008 year classes, males from 11 other year classes were sampled, but none represented greater than 11.5% of the sample. The oldest male walleye sampled were six fish from the strong 2001 year class (15 years old). Nearly 100% of male walleyes are mature by age 3, thus it wasn’t a surprise to see the strong showing of the 2013 year class fish in the marshes.

Figure 2. Adult Walleye Size Structure (Spring 2016)

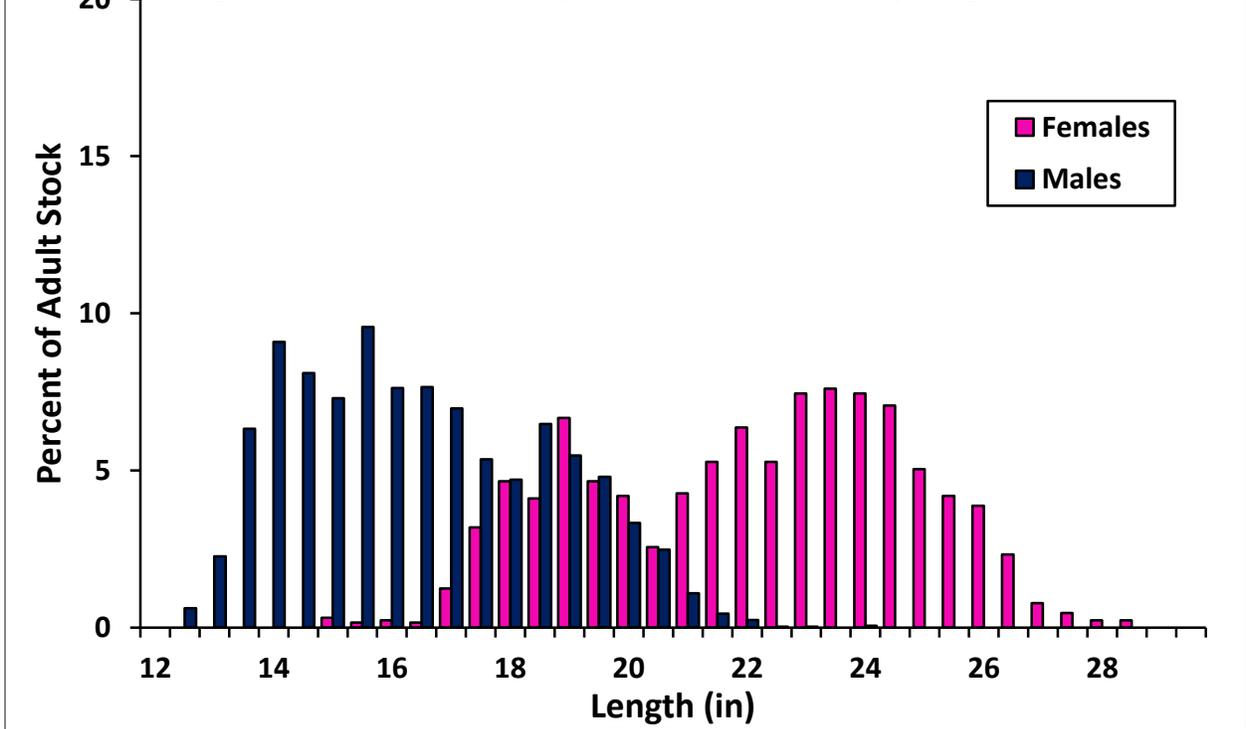
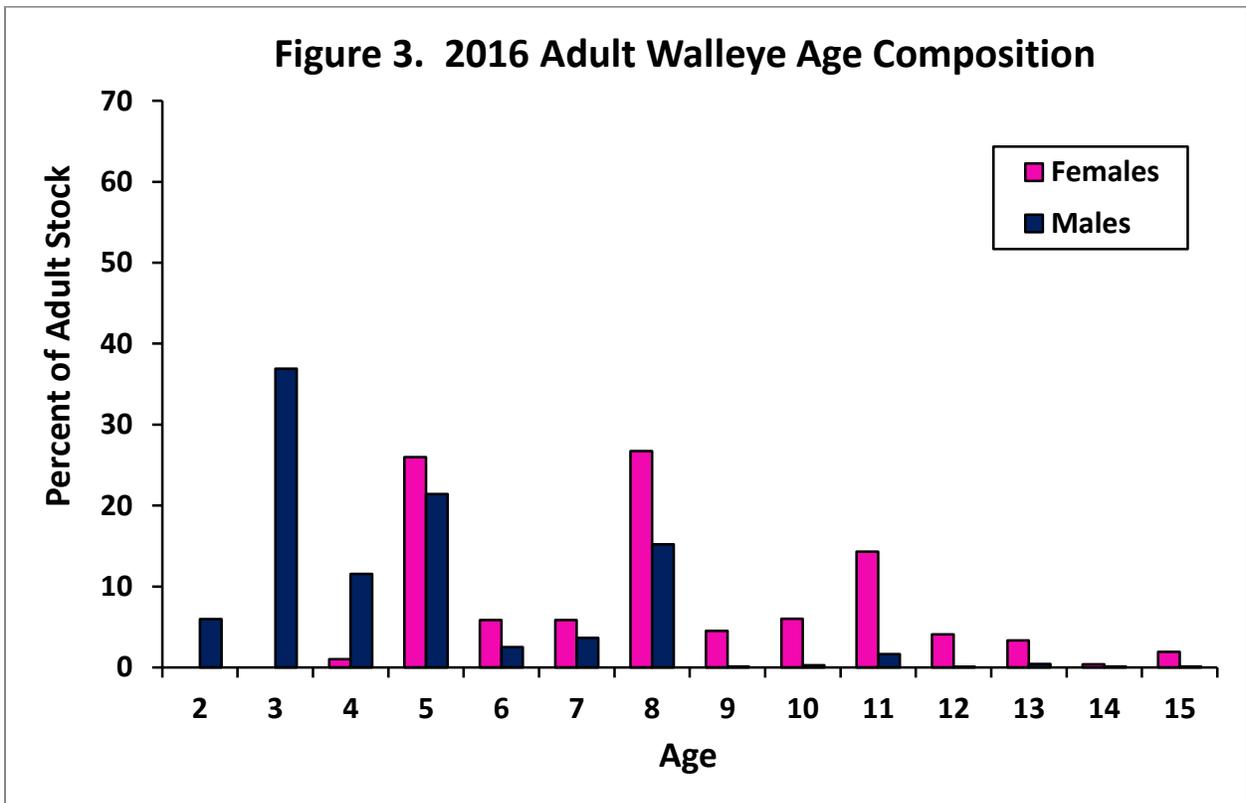


Figure 3. 2016 Adult Walleye Age Composition

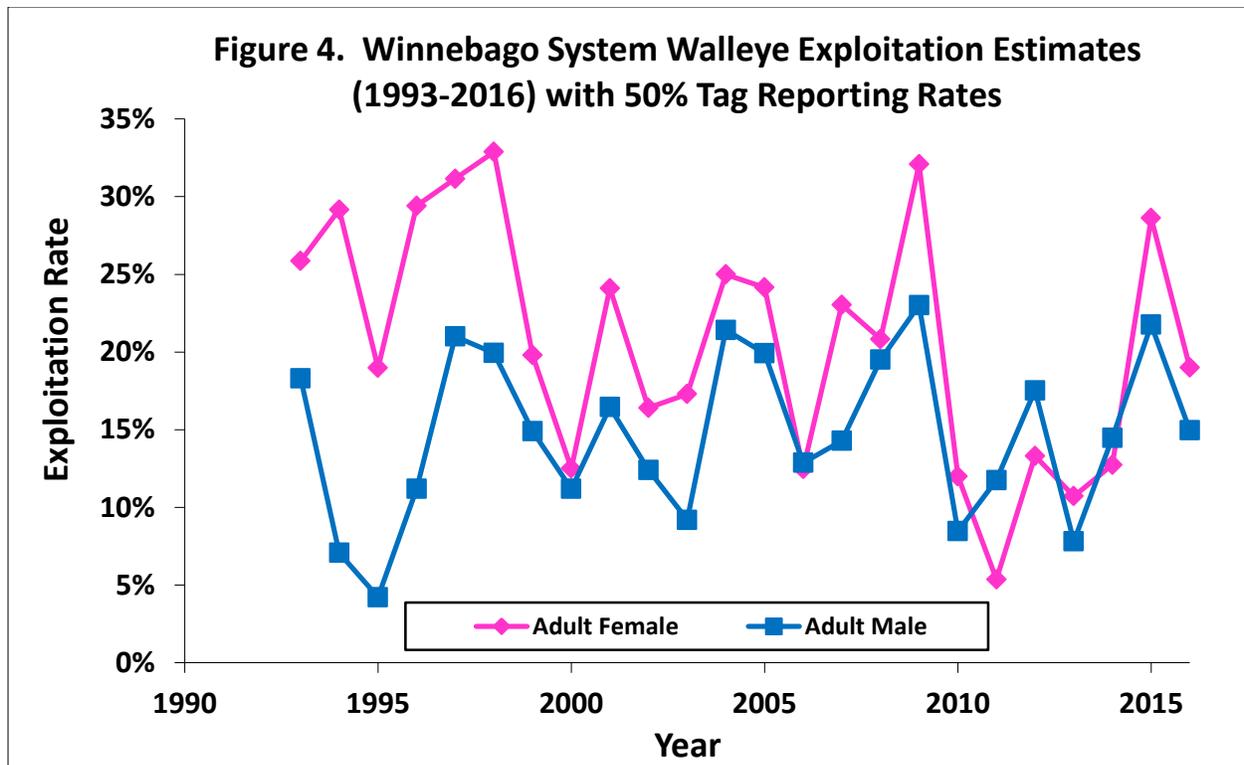


Female walleye sampled during the 2016 survey ranged from 15.0-28.9 inches with an average length of 22.3 inches (Figure 2). Similar to the males, aging analyses indicated three primary age classes comprising 67.0% of the adult females sampled (Figure 3). However, the female age composition was led by the strong 2008 (26.7%), 2011 (26.0%), and 2005 (14.3%) year classes. No other year class represented greater than 6% of the age composition and the oldest females sampled included 5 fish from the strong 2001 year class (15 years old).

Female walleye typically reach maturity between 4-6 years of age (~30% mature at age 4, 82% by age 5, and 99% by age 6). Therefore, it was expected that a good pulse of adult females from the 2011 year class would navigate the Wolf River in search of spawning marshes in 2016. Although the age composition of female walleye from the 2011 females increased from 9.6% in 2015 to 26.0% in 2016, 2008 still retained the status of being the more abundant year class. The majority of the 2011 adult females should be mature for the 2017 spring run, thus it will be interesting to see if the 2011 females will take over as the most abundant year class in 2017. In addition, around 30% of females from the strong 2013 year class should reach maturity and make their first spawning run in 2017, thus anglers are likely to come across more fish in the 15-17 inch range.

Tagging walleye each spring also allows for the tracking of annual exploitation rates, which is one of the primary objectives of the walleye spawning stock assessment. Low forage base levels from 2013-2015 set up for a good year of walleye fishing in 2015, which was reflected in the estimated annual exploitation rates of 21.8% for adult males and 28.6% for adult females (based on an estimated 50% angler tag reporting rate). The 2016 estimated exploitation rates were considerably lower, 15.0% for adult males and 19.0% for adult females. Overall, the 2016 exploitation rates were quite similar to the overall average (1993-2016) of 14.7% for males and 20.7% for females (Figure 4). The decrease in exploitation rates in 2016 can likely be tied to abundant forage base levels. Although walleye fishing was superb during the early season, strong hatches of several forage species provided walleye with a buffet of food choices by early summer.

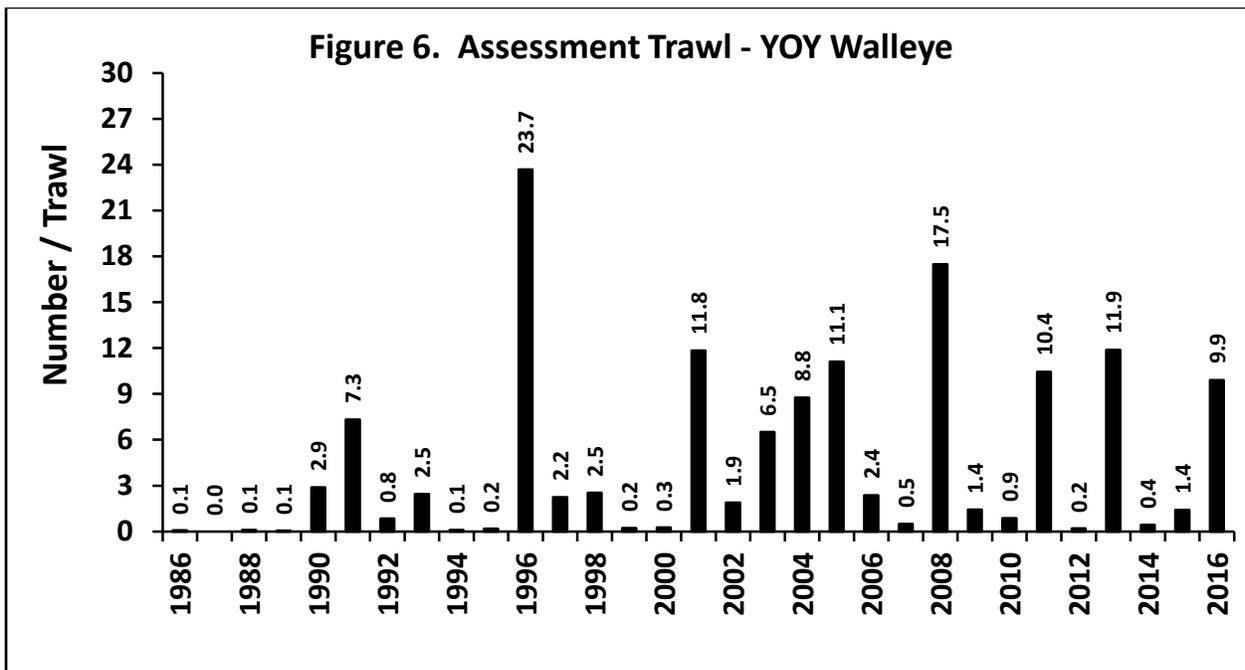
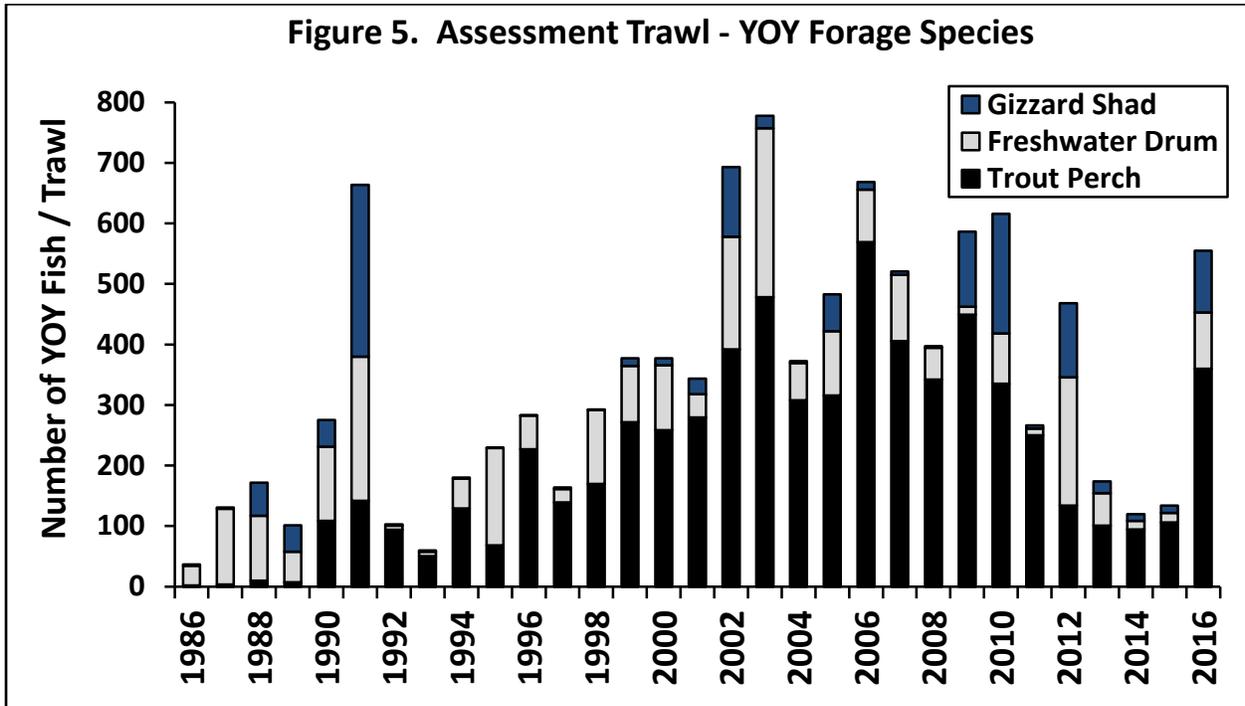
In addition to tagging mature walleye on the Wolf River, DNR staff also tagged 265 immature female walleye ranging from 11.0-20.5 inches. These fish were captured from Lake Poygan (207 fish), Lake Winnebago (43 fish), and Lake Butte des Morts (25 fish) from early-mid April. The 2016 immature female estimated annual exploitation rate was 16.6%, which was substantially lower than in 2015 (41.6%), based on an estimated 50% tag reporting rate. This was the second year that immature female walleye were tagged on the Winnebago System and DNR staff will aim to tag fish again in 2017. Collecting more years of data will be critical for establishing trends and evaluating harvest pressure on immature female walleye within the population.



As noted above, forage base levels can directly influence exploitation rates and fishing success. In fact, the lower overall forage base numbers from 2013-2015 were among the lowest levels observed since the early 1990s. The 2016 annual bottom trawling assessment revealed a substantial increase in overall forage numbers (Figure 5). A strong rebound in young of year (YOY) trout perch numbers was revealed (359.8/trawl), far surpassing the 2015 catch rate (106.2/trawl). In addition, the YOY gizzard shad catch rate (102.4/trawl) ranked as the 6th strongest hatch since 1986. Although often overlooked as forage base items, a measurable year class of YOY freshwater drum (93.0/trawl) and fair numbers of YOY emerald shiners (3.5/trawl, ranked as 3rd highest catch since 1986) were also produced in 2016. The strong year classes for multiple forage species should help to provide more stability in the forage base and produce some plump fish for anglers in 2017. However, anglers throughout the system are well aware of how walleye can become tight lipped following strong forage years, particularly during strong shad hatches.

Last but certainly not least, the 2016 trawl survey revealed a YOY walleye catch rate of 9.9/trawl, ranking as the 7th highest catch rate since 1986 (Figure 6). The results validated the hopes of many walleye enthusiasts that witnessed the high 2016 spring water levels and anticipated a strong walleye hatch as a result. The 2016 catch rate was substantially higher than in 2014 (0.4/trawl) and 2015 (1.4/trawl), but comparable to strong year classes from 2011 and 2013. The strong 2016 year class can be attributed to the high spring water levels observed on the Wolf River that led to favorable conditions on walleye spawning marshes. Besides having

favorable water conditions, walleye fry also need a good supply of zooplankton available for food to survive once they arrive in the Upriver Lakes and Lake Winnebago. Nonetheless, Mother Nature is the major driving force that dictates spring water levels, zooplankton availability, and other variables that drive walleye year class strength on the system.



Although the Winnebago System experienced weak walleye year classes in 2014 and 2015, strong year classes from 2008, 2011, and 2013 continue to fuel a robust walleye fishery. In addition, the strong 2016 year class will provide another boost in the fishery 2-3 years from now. Favorable growing conditions (extended growing season and abundant forage) also resulted in good growth of fish from the 2016 year class (average October length of 6.9”), compared to 5.8” in 2015 and 5.4” in 2014. Anglers can expect to see males from the 2016 year class make their first spawning run in 2019 while females will spawn for the first time in 2020-2022. For 2017, the 2013 year class should provide anglers with some quality sized fish (14-17 inches) with some larger fish from the 2011 and 2008 year classes mixed in as well. Nonetheless, it will be interesting to see how the walleye bite progresses in 2017 considering the strong hatches of several forage fish species in 2016, including gizzard shad. There will likely be some plump walleye to be had in 2017, but anglers may need to expend some extra effort to convince them to bite.



Winnebago System Tag Return	
Tag Number :	_____
Species :	_____
Date Caught :	_____
Waterbody :	_____
Location :	_____
Length :	_____
Fish Kept? :	_____
Angler Information	
<small>Preferred contact method (only need one)</small>	
Name :	_____
<input type="checkbox"/> Address :	_____
City, State ZIP :	_____
<input type="checkbox"/> Email :	_____

Thank you for taking the time to read the 2016 walleye report and learn more about Winnebago System fisheries management. Remember, if you happen to catch a tagged walleye, yellow perch, or northern pike please either mail the catch information (see tag return sheet above) to the Oshkosh DNR office (625 East County Road Y, Oshkosh WI 54901), email it to DNRWINNEBAGOSYSTEMTAGRETURNS@wisconsin.gov, or call 920-303-5429. Good luck fishing in 2017 and be safe on the water!

Sincerely, Adam Nickel
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